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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/863,338	05/24/2001	Ge Xu	001425-108	1018

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EXAMINER

MACARTHUR, SYLVIA

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 10/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/863,338

Applicant(s)

XU ET AL.

Examiner

Sylvia R MacArthur

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/435,625, 09/255,852.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) eIDS.#7 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

1. Claims 23-32 have been renumbered to Claims 22-31 since Claim 22 was omitted.

### *Double Patenting*

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1, 2, 9, 10, 15-18, 21, 22, 31 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 6,245,396.

Although the conflicting claims are not identical, they are not patentably distinct from each other because

US 6,245,396 claims a CVD apparatus comprising a reactor in which plasma is generated and active species are formed and film deposition is carried out on a substrate with the active species and a precursor gas; a partitioning plate in which a plurality of holes has been formed is arranged in the reactor. The plate separates the chamber into a plasma generating space and

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deposition process space. The holes in the partitioning plate are to satisfy the  $uL/D > 1$  condition. The partitioning plate is connected to an RF power supply for cleaning purposes. Further, the patent claims an equalizing plate provided in a gas reservoir. Also, the patent teaches an electrode for discharge purposes in an intermediate position in the plasma generating space.

Claim 1: The patent fails to claim a substrate support mechanism.

It well known in the art to utilize substrate supports in a vacuum vessel to prevent substrate from being unsupported in this harsh environment.

Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide a substrate support for the apparatus of US 6,245,396.

Claim 22: The patent fails to teach the gas is oxygen.

Nevertheless the apparatus of 6,245,396 is capable of using oxygen. The type of gas is an art recognized optimizable parameter.

4. Claims 3, 4, 11, 12, and 19 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 6,245,396 in view of Rose (US 4,792,378).

Claims 3, 4, and 19: The patent also fails to teach a two-layer diffusing structure.

The annular ring 39 of Rose comprises the shower head and gas dispersion disk and separates the reactor into two chambers.

The motivation to modify the gas supply structure of US 6,245,396 to include two layers is that the a multiplayer supply ensures uniform distribution of plasma gases in a desired pattern.

Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to combine the teachings of Rose with those of US 6,245,396.

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5. Claims 5-8, 13, 14, 20, 25-30 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 6,245,396 in view of Usami (US 5,863,339).

The patent fails to teach a means (a switch) for connecting the partitioning wall to the RF power to supply power with suitable timing.

Usami teaches a chamber etching of plasma processing apparatus. In the abstract Usami teaches a first RF power source 21 is connected to the showerhead via a switch 28. Note that the showerhead comprises the partitioning wall.

The motivation to provide the switch as a connection for the partitioning wall and power supply is reducing etching time by provide for enhanced control of the plasma power source.

Thus, it would have been obvious for one of ordinary art at the time of the claimed invention to provide a means of connecting the partitioning wall to the RF power source via a switch.

6. Claims 1,2,9, 10, 15-18, 21, 22, and 31 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-23 of copending Application No. 09/862,458. Although the conflicting claims are not identical, they are not patentably distinct from each other because the copending application claims a vacuum reaction chamber and a dividing plate wherein the dividing plate divides the chamber into a plasma discharge space and a film deposition process space. The dividing plate comprises a plurality of holes. The holes satisfy the condition  $uL/D > 1$ , where  $u$  is the gas flow rate inside the holes,  $L$  is the effective length of the holes, and  $D$  is the gas interdiffusion coefficient.

Claim 1: The patent fails to claim a substrate support mechanism.

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It well known in the art to utilize substrate supports in a vacuum vessel to prevent substrate from being unsupported in this harsh environment.

Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide a substrate support for the apparatus of the copending application.

Claim 22: The co-pending application fails to teach the gas is oxygen.

Nevertheless the apparatus of the co-pending application is capable of using oxygen. The type of gas is an art recognized optimizable parameter.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

7. Claims 3, 4, 11, 12, and 19 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-23 of copending Application No. 09/862,458 in view of Rose.

Claims 3, 4, and 19: The patent also fails to teach a two-layer diffusing structure.

The annular ring 39 of Rose comprises the showerhead and gas dispersion disk and separates the reactor into two chambers.

The motivation to modify the gas supply structure of US 6,245,396 to include two layers is that a multilayer supply ensures uniform distribution of plasma gases in a desired pattern.

Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to combine the teachings of Rose with those of the co-pending application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

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8. Claims 5-8, 13, 14, 20, 25-30 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-23 of copending Application No. 09/862,458 in view of Usami.

The co-pending application fails to teach a means (a switch) for connecting the partitioning wall to the RF power to supply power with suitable timing.

Usami teaches a chamber etching of plasma processing apparatus. In the abstract Usami teaches a first RF power source 21 is connected to the showerhead via a switch 28. Note that the showerhead comprises the partitioning wall.

The motivation to provide the switch as a connection for the partitioning wall and power supply is reducing etching time by provide for enhanced control of the plasma power source.

Thus, it would have been obvious for one of ordinary art at the time of the claimed invention to modify the co-pending application to provide a means of connecting the partitioning wall to the RF power source via a switch.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.


9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sylvia R MacArthur whose telephone number is 703-306-5690. The examiner can normally be reached on M-F during the core hours of 8 a.m. and 2 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory L. Mills can be reached on 703-308-1633. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Sylvia R MacArthur  
Patent Examiner  
Art Unit 1763

  
October 9, 2003